US006193560B1

(12) **United States Patent**
Morana et al.

(10) **Patent No.: US 6,193,560 B1**
(45) **Date of Patent: Feb. 27, 2001**

(54) **CONNECTOR ASSEMBLY WITH SIDE-BY-SIDE TERMINAL ARRAYS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/518,735**

(22) Filed: **Mar. 3, 2000**

(51) **Int. Cl.**[7] **H01R 24/00**
(52) **U.S. Cl.** **439/676**; 439/541.5
(58) **Field of Search** 439/676, 540.1, 439/541.5, 903

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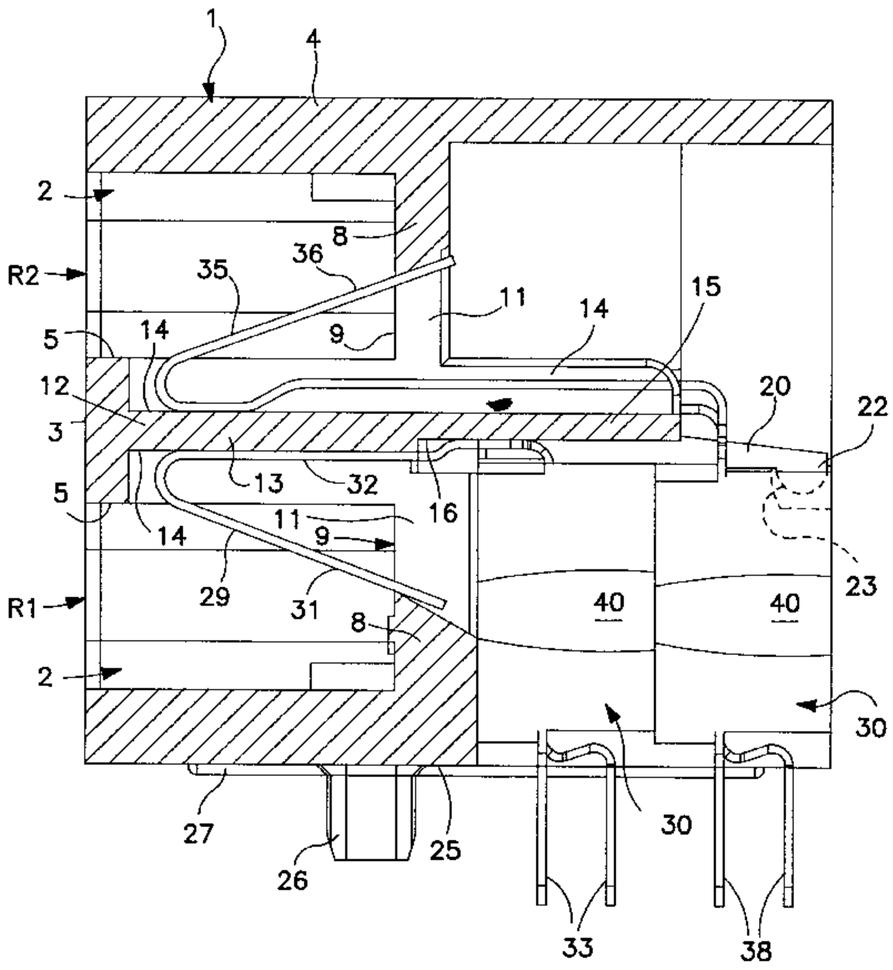
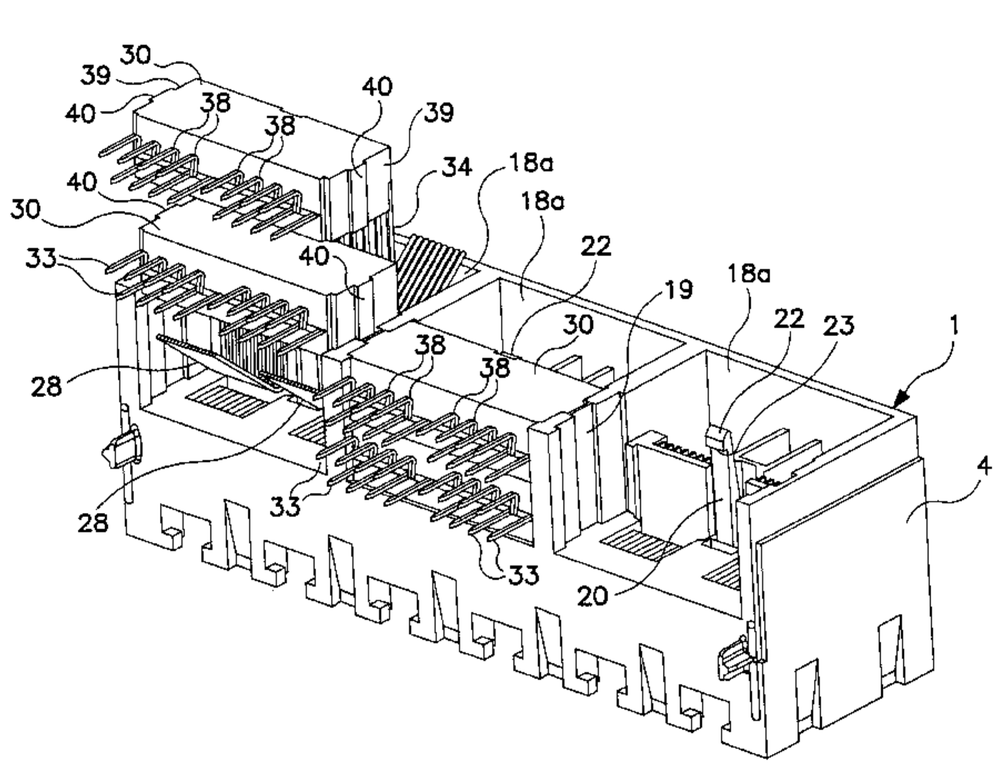
Primary Examiner—Khiem Nguyen
Assistant Examiner—Hae Moon Hyeon

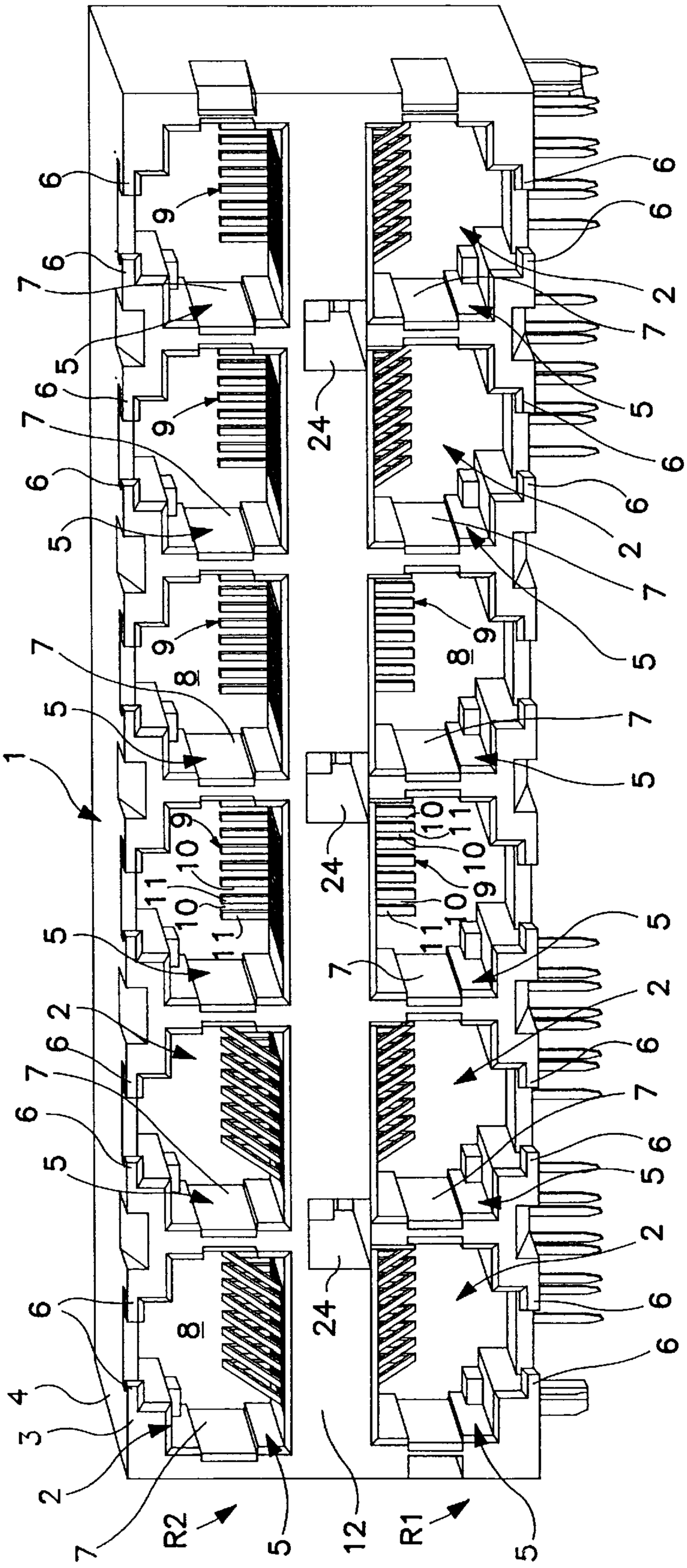
(57) **ABSTRACT**

A connector assembly **(1)** has a lower row of side-by-side terminal arrays **(28)** having a common dielectric carrier **(30)**, and an upper row of side-by side terminal arrays **(34)** having a common dielectric carrier **(3)**, each of the carriers **(30)** has guide sections **(40)** at opposite lateral ends, the carriers **(30)** are installed one behind the other, with the guide sections **(40)** being guided along common guides **(19)** of the housing **(4)**, and the housing **(4)** has a resilient latch arm **(20)** that extends between the side-by-side terminal arrays **(28** and **34)**, and holds the carriers **(30)** one behind the other.

18 Claims, 7 Drawing Sheets



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R2
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R1
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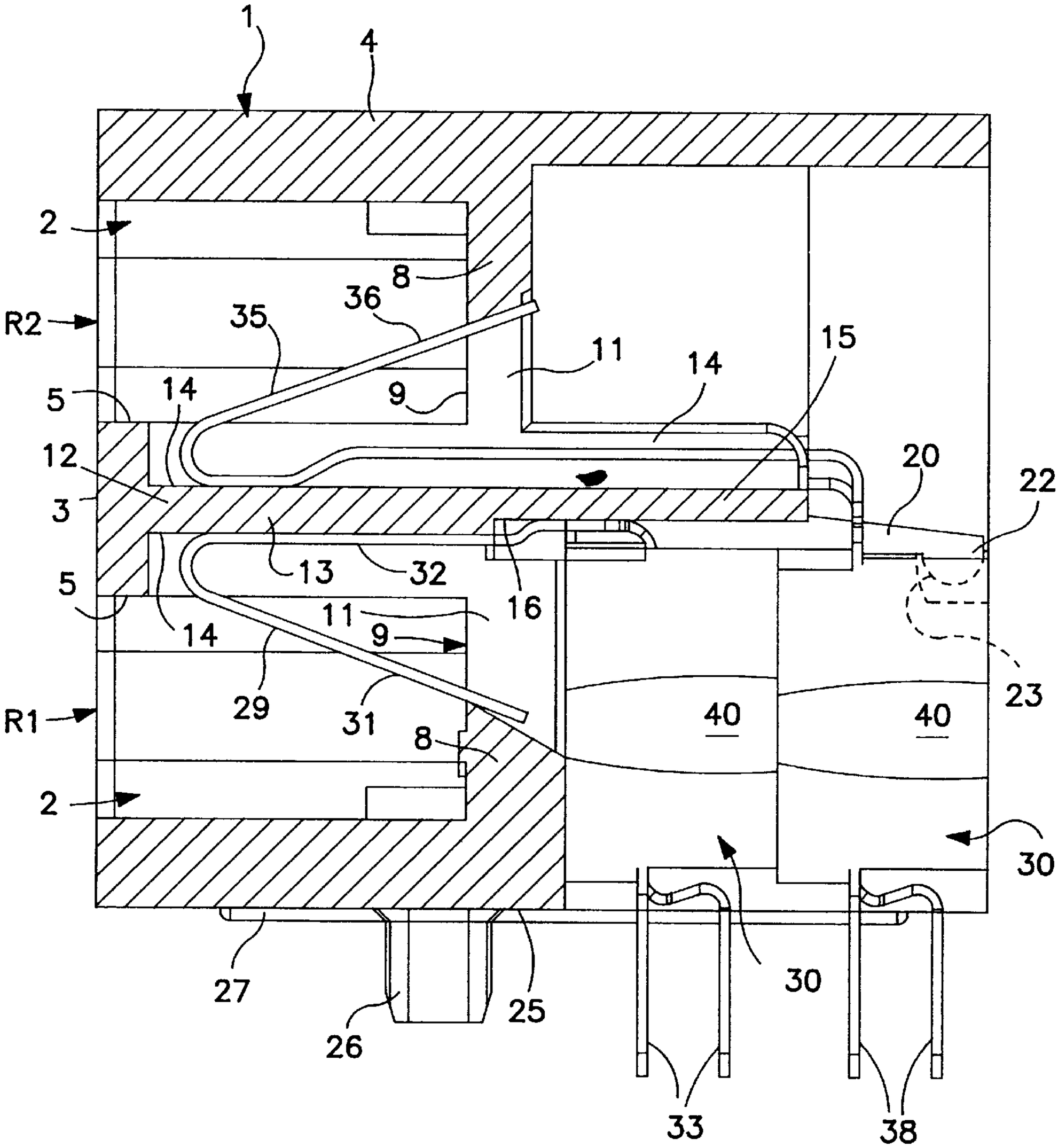
FIG. 1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R1
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FIG. 2

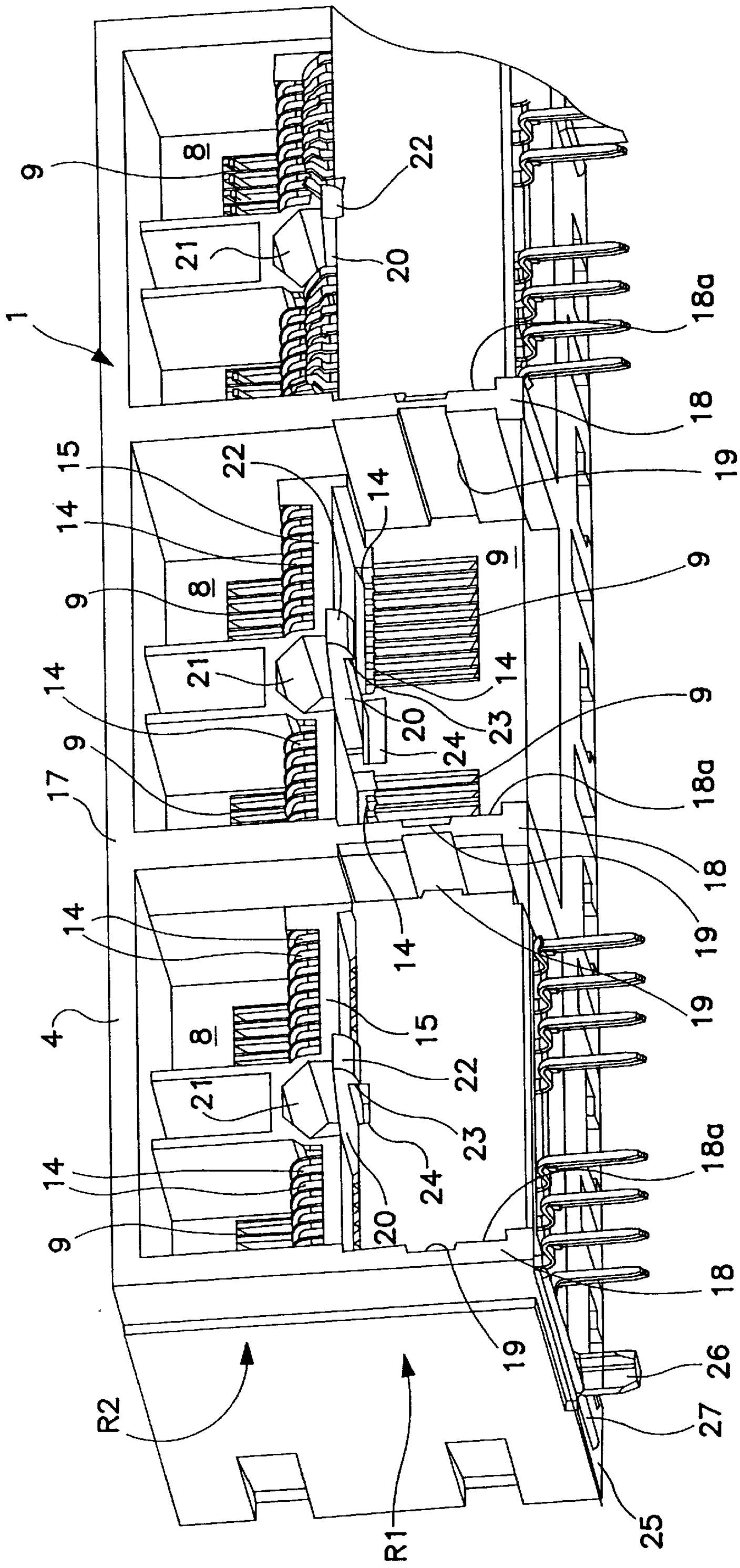
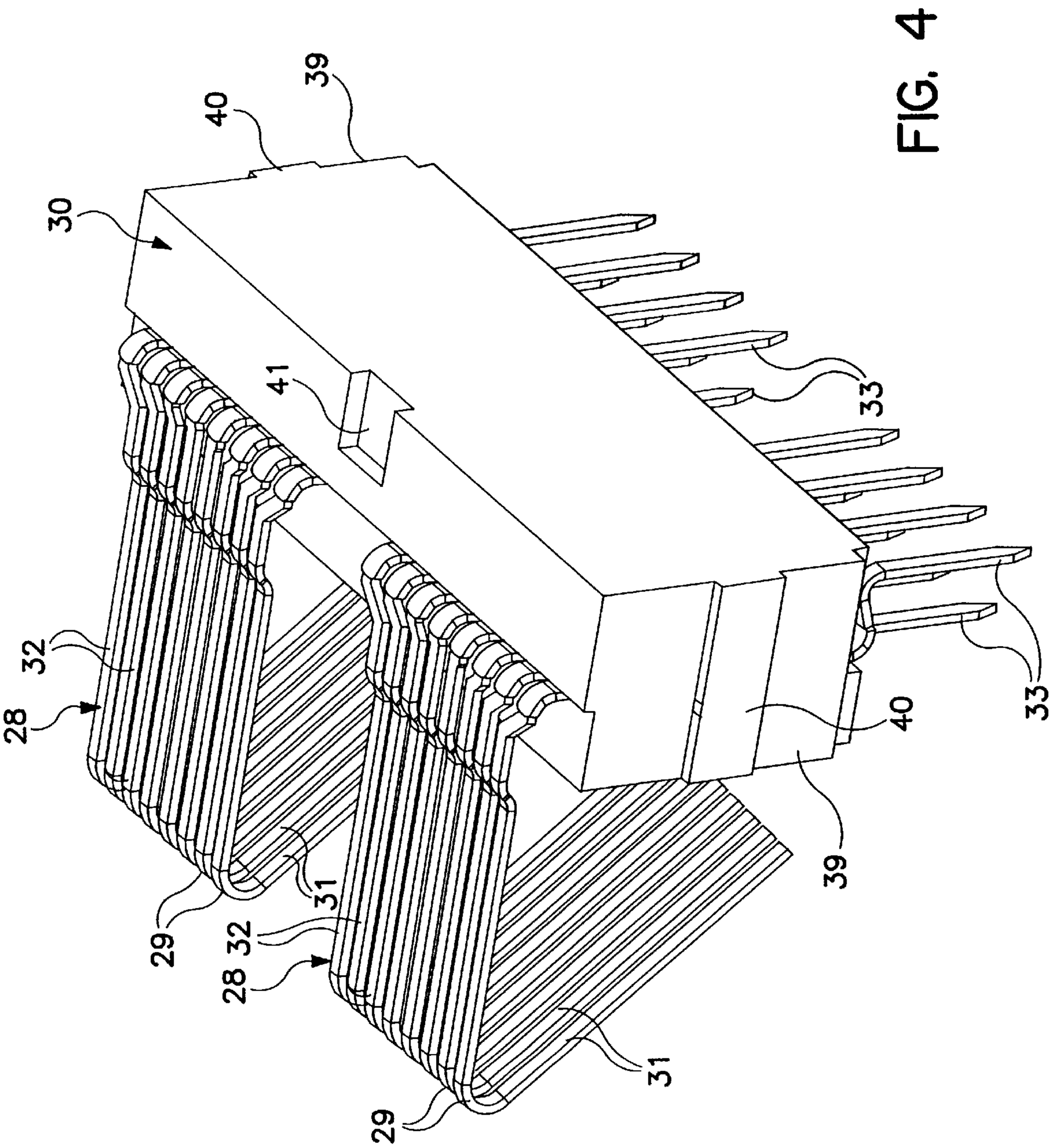


FIG. 3

FIG. 4



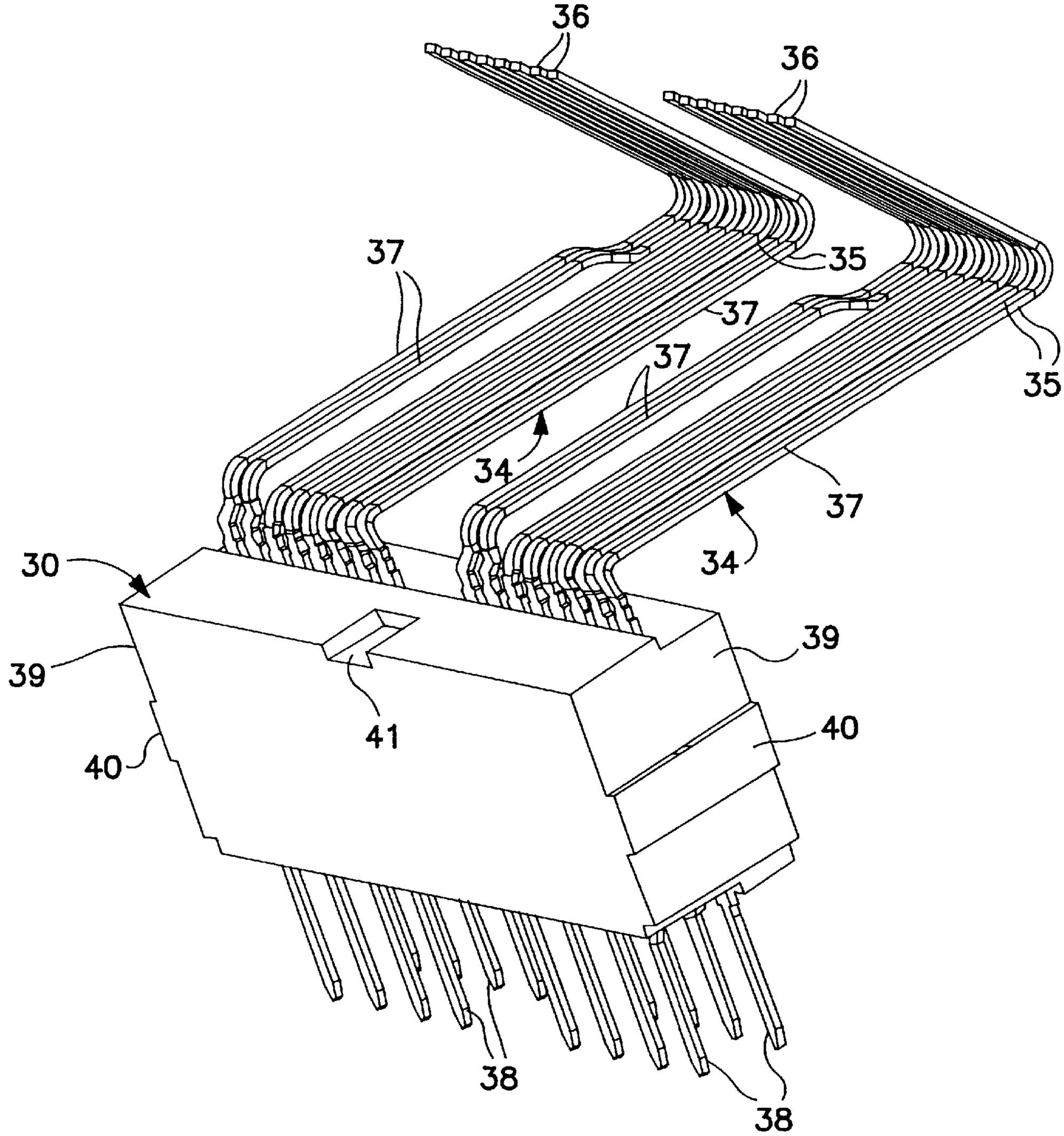


FIG. 5

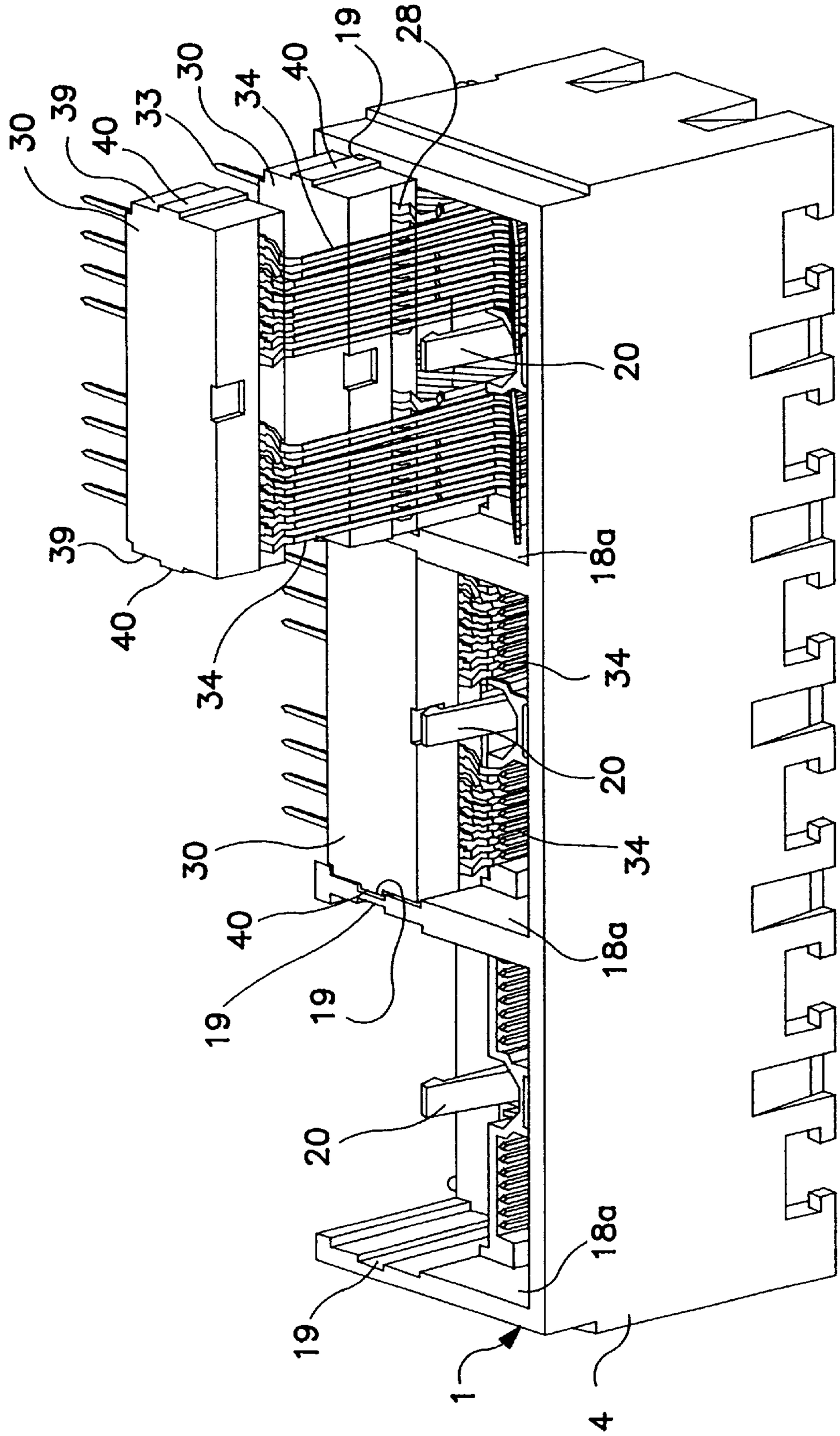
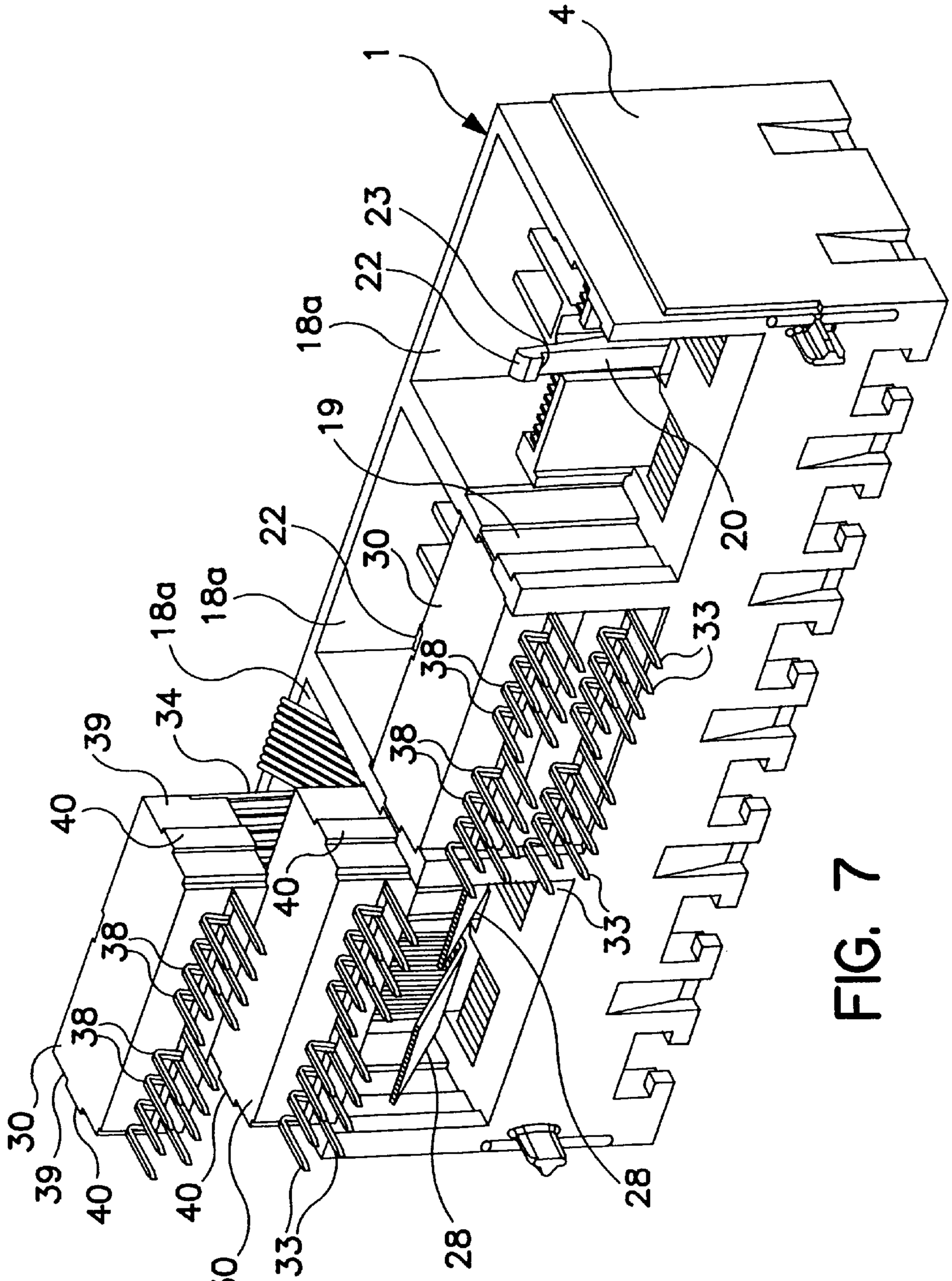


FIG. 6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28

FIG. 7

CONNECTOR ASSEMBLY WITH SIDE-BY-SIDE TERMINAL ARRAYS

FIELD OF THE INVENTION

The present invention relates to a connector assembly with terminal arrays for installation with plug receiving cavities, and, more particularly, to a connector assembly with side-by-side terminal arrays having a common dielectric carrier.

BACKGROUND OF THE INVENTION

A known connector assembly has multiple receptacle connectors in a common housing, which provides a compact arrangement of such receptacle connectors. Such a connector assembly is useful to provide multiple telephone connection ports. Accordingly, such a connector assembly is referred to as a multiple port connector assembly. Specifically, the receptacle connectors are in the form of RJ-11 type modular jacks that provide such ports for connection with a telephone switching network of a telephone service provider, such as, a regional telephone company or national telephone company.

The receptacle connectors, that is, modular jacks, each have electrical terminals arranged in a terminal array, and a plug receiving cavity. The modular jacks establish mating connections with RJ-11 modular plugs that terminate opposite ends of telephone cords leading to wall mounted telephone outlets inside a building. The telephone outlets connect to telephone lines outside of the building, which, in turn, connect to the telephone switching network of the telephone service provider.

As disclosed in U.S. Pat. No. 5,531,612, a known connector assembly has two rows of receptacle connectors, that is, modular jacks, arranged side-by-side in an upper row and side-by-side in a lower row in a common housing, which advantageously doubles the number of receptacle connectors without having to increase the length of the housing. The receptacle connectors have plug receiving sections with plug receiving cavities that are profiled to surround modular plugs that are to be inserted in the cavities. The modular plugs have resilient latches, which engage with latching sections on the modular jacks. The latches are capable of being grasped by hand, and being resiliently bent inwardly toward the plugs to release them from engagement with the latching sections on the modular jacks.

As discussed in the patent, the receptacle connectors in the upper row are arranged back to back with the receptacle connectors in the lower row. Further, plug receiving sections of the receptacle connectors in the upper and lower rows are arranged in substantially mirror image dispositions relative to a line between the upper and lower rows. The advantage, is that the back to back rows provide good access to the resilient latches of the modular plugs, for grasping and releasing the latches from engagement with the latching sections on the modular jacks.

Further, as discussed in the patent, the receptacle connectors include modular jack inserts. Each modular jack insert is constructed with multiple electrical terminals arranged in a terminal array. Each terminal array has an overmolded dielectric insert. The terminal arrays are installed, one by one, in respective ones of the receptacle connectors. One of the disadvantages of the known connector assembly, is the slow process of installing the terminal arrays one-by-one. What is needed is a connector assembly that eliminates the slow process of assembling terminal arrays one-by-one.

As described by the patent, there are resilient latches integrally attached to the housing, which project into each

one of the plug receiving cavities to latch to the dielectric inserts. Specifically, the dielectric inserts are installed, one by one, into the plug receiving cavities, making sure that the resilient latches become biased into latching positions to hold the dielectric inserts in place. Having the latches at each of the plug receiving cavities means that the latches are necessarily small in size, and are relatively weak and easily damaged. What is needed is a housing with a latching system having an integral latch that is of robust size and strength to hold dielectric inserts in place, and yet provide such a latching system in a minimal amount of space.

Providing the latches at each of the plug receiving cavities results in a molded part of complex structure. Such a complex structure increases the attendant cost of constructing molding dies that mold fluent dielectric material to form the latches. Further, both the speed of the production process, and the yield of production, are significantly reduced by the complex structure. What is needed is a connector assembly that eliminates multiple latches at each of the plug receiving cavities.

SUMMARY OF THE INVENTION

The invention provides a connector assembly including, a lower row of side-by side-terminal arrays having a first common dielectric carrier, and an upper row of side-by-side terminal arrays having a second common dielectric carrier. By providing the terminal arrays with common dielectric carriers, the invention eliminates the problems associated with having to install such terminal arrays one by one in a housing.

According to a feature of the invention, opposite lateral ends of each of the common carriers have guide sections. A single pair of guides are in the housing along which said pairs of guide sections are guided. Specifically, both common carriers are installed, one carrier behind the other carrier, with each pair of guide sections being guided one behind the other along a common pair of guides in the housing. Accordingly, the connector assembly further provides a housing of simplified construction, by having a single pair of guides to guide the guide sections both common carriers.

According to a further feature of the invention, both of the common dielectric carriers are held in place by a single latching arm on the housing. By requiring only a single latching arm, the connector assembly provides the advantage of a simplified housing structure capable of high speed production, and attaining high production yield. The single latching arm on the housing that holds both of the common dielectric carriers in place is robust in size and strength, and yet provides a latching system in a minimal amount of space. Further, the latch is externally of the plug receiving cavities, and eliminates numerous latches to hold individual terminal arrays.

DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described by way of example, with reference to the accompanying drawings, according to which:

FIG. **1** is an isometric view of a housing of a connector assembly, and further showing examples of terminal arrays installed in side-by-side sections of the housing to provide side-by-side receptacle connectors;

FIG. **2** is an enlarged cross section of the housing shown in FIG. **1**, and further showing terminals installed in both an upper row and a lower row, the terminals having dielectric carriers installed one behind the other;

FIG. **3** is an isometric view of a rear of the housing as shown in FIG. **1**, and further showing examples of dielectric carriers for terminal arrays, which examples are installed in side-by-side sections of the housing;

FIG. **4** is an isometric view of a lower row of side-by-side terminal arrays having a common dielectric carrier;

FIG. **5** is an isometric view of an upper row of side-by-side terminal arrays having a common dielectric carrier;

FIG. **6** is an isometric view of a rear of the housing as shown in FIG. **2**, and further showing terminal arrays having dielectric carriers in the process of being installed in the housing; and

FIG. **7** is an isometric view similar to FIG. **6**.

DETAILED DESCRIPTION

With reference to FIG. **1**, a connector assembly **1** has multiple receptacle connectors **2** in a front mating face **3** of a common housing **4**. Such a connector assembly **1** is useful to provide multiple telephone connection ports. Accordingly, such a connector assembly **1** is referred to as a multiple port connector assembly **1**. Specifically, the receptacle connectors **2** are in the form of RJ-11 type modular jacks that provide such ports. The modular jacks establish mating connections with known electrical plugs in the form of RJ-11 modular plugs. The receptacle connectors **2**, that is, modular jacks, each have plug receiving cavities **5** that are profiled to surround modular plugs that are to be inserted in the cavities **5**. The modular plugs have resilient latches, which engage with latching protrusions **6** along the front mating face **3** of the housing **4**. The latches of the modular plugs are capable of being grasped by hand, and being resiliently bent inwardly toward the plugs to release them from engagement with the latching protrusions **6**.

The connector assembly **1** has two rows of receptacle connectors **2**, that is, modular jacks, arranged side-by-side in a lower row R**1**, and side-by-side in an upper row R**2** in the housing **4**, which advantageously doubles the number of receptacle connectors **2** without having to increase the length of the housing **4**. The side-by-side receptacle connectors **2** in the lower row R**1** are arranged back to back with those in the upper row R**2**. The receptacle connectors **2** in the rows R**1** and R**2** are arranged in substantially mirror image dispositions relative to a line between the rows R**1** and R**2**. The advantage, is that the back to back receptacle connectors **2** provide good access to the resilient latches of the modular plugs, for grasping and releasing the latches from engagement with the latching protrusions **6**.

FIG. **1** shows that the side-by-side plug receiving cavities **5** in the lower row R**1**, are separated from each other by vertical side walls **7**. Similar vertical side walls **7** separate side-by-side plug receiving cavities **5** in the upper row R**2**. Such side walls **7** extend from the front mating face **3** of the housing **4**, and extend rearwardly into the interior of the housing **4**, until they meet with an interior vertical transverse wall **8** of the housing **4**. The vertical transverse wall **8** extends transversely across each of the plug receiving cavities **5**. Further, combs **9** having spaced apart teeth **10** are integrally formed in the vertical transverse wall **8**. The combs **9** have arrays of narrow, terminal receiving openings **11** through the vertical transverse wall **8**. The teeth **10** of the combs **9** are between the terminal receiving openings **11** of the combs **9**. There are side-by-side combs **9** in the upper row R**2** and side-by-side arrays of terminal receiving openings **11** in the upper row R**2**, which are in alignment with side-by-side plug receiving cavities **5** in the upper row R**2**. Similarly, there are side-by-side combs **9** in the lower row R**1** and side-by-side arrays of terminal receiving openings **11** in the lower row R**1**, which are in alignment with side-by-side plug receiving cavities **5** in the lower row R**1**.

Further, FIG. **1** shows that the upper row R**2** of receptacle connectors **2** are separated from those in the lower row R**1** by a horizontal interior wall **12** of the housing **4**. Such horizontal interior wall **12** is shown further in cross section in FIG. **2**. With reference to FIG. **2**, the horizontal interior wall **12** has a forward portion **13** extending forwardly of the vertical transverse wall **8** to the front mating face **3**. Terminal receiving grooves **14** are in a top side of the horizontal interior wall **12**. Further, these terminal receiving grooves **14** are arranged in side-by-side arrays that extend within respective side-by-side plug receiving cavities **5** of the upper row R**1**. Similarly, additional terminal receiving grooves **14** are in an underside of the horizontal interior wall **12**, which are arranged in side-by-side arrays that extend within respective side-by-side plug receiving cavities **5** of the lower row R**1**. Respective terminal receiving grooves **14** form connecting passages with respective terminal receiving openings **11** of the combs **9**.

As further shown in FIG. **2**, the terminal receiving grooves **14** in the top side of the horizontal interior wall **12** extend through the vertical transverse wall **8**, to provide connecting passages to the rear of the vertical transverse wall **8**. Further, the terminal receiving grooves **14** extend in a rearward portion **15** of the horizontal interior wall **12** that extends rearwardly of the vertical transverse wall **8**. Similarly, the additional terminal receiving grooves **14** in the underside of the horizontal interior wall **12** extend through the vertical transverse wall **8** to provide connecting passages to the rear of the vertical transverse wall **8**. Further, the rearward portion **15** of the horizontal interior wall **12** is made thinner by a stepped underside **16**, FIG. **2**, to provide access to the additional terminal receiving grooves **14**. in the underside of the horizontal interior wall **12**.

The rear of the vertical transverse wall **8** is best seen in FIG. **3**, showing a rear face **17** of the housing **4** that is substantially open to view the combs **9** and the terminal receiving grooves **14**. Specifically, there are side-by-side arrays of terminal receiving grooves **14** in the upper row R**2**, which are aligned with the side-by-side combs **9** in the upper row R**2**. Further, there are side-by-side arrays of additional terminal receiving grooves **14** in the lower row R**1**, which are aligned with the side-by-side combs **9** in the lower row R**1**.

With continued reference to FIG. **3**, the rear of the housing **4** has spaced apart vertical partitions **18** that divide the rear of the housing **4** into one or more side-by-side sections **18***a*. Each side-by-side section **18***a* of the housing **4** includes at least two side-by-side combs **9** of the upper row R**2**, and at least two side-by-side combs **9** of the lower row R**1**. Although FIG. **3** shows the side-by-side combs **9**, in each row R**1** and R**2**, as being at least two in number for each section **18***a* of the housing **4**, such number can be increased beyond two, to as large a number as is reasonable.

With continued reference to FIG. **3**, each side-by-side section **18***a* of the housing **4** is a carrier receiving area that is between the vertical partitions **18**. The vertical partitions **18** have common guides **19** in the form of a single pair of alignment grooves facing the carrier receiving area. The common guides **19** in the form of such alignment grooves extend from the rear face **17** forwardly toward the vertical transverse wall **8**.

With further reference to FIG. **3**, each side-by-side section **18***a* of the housing **4** has a single resilient latching arm **20**.

The latching arm **20** extends rearwardly, and is free to deflect resiliently within a clearance provided by an arch shaped recess **21** in a thickened section of the rearward portion **15** of the horizontal interior wall **12**. The latching arm **20** has a tapered tip **22** with an undercut latching shoulder **23** that is aligned rearwardly of a core pin passage **24** through the vertical transverse wall **8**. Further the core pin passage **24** extends entirely through the housing **4**, and emerges as an enlarged, core pin passage **24** at the front mating face **3**, as shown in FIG. **1**.

With continued reference to FIG. **3**, the latching arm **20** is an integral part of the housing **4**, which is formed by molding dielectric material in a mold cavity of a molding apparatus. The undercut latching shoulder **23** of the latching arm **20** is formed by a first core pin of the molding apparatus that projects into the mold cavity, and that further forms the core pin passage **24**. The arch shaped opening **21** is formed by a second core pin of the molding apparatus that projects into the mold cavity. Similarly, additional core pins project into the mold cavity to form the respective shapes of the plug receiving cavities **5**, the combs **9** in the vertical transverse wall **8**, the grooves **14** in the horizontal interior wall **12**, and the partitions **18** that have the common guides **19** in the form of alignment grooves.

As further shown in FIG. **3**, the housing **4** is adapted for mounting on a printed circuit board, PCB. A bottom **25** of the housing has projecting alignment posts **26** that are adapted to register in alignment openings through the thickness of the PCB. Thin ribs **27** on the bottom **25** of the housing **4** provide projecting standoffs adapted to engage a surface of the PCB, and to lift the bottom **25** of the housing **4** slightly above the PCB.

Attention is directed to FIG. **4**, showing at least two side-by-side terminal arrays **28**. Each terminal array **28** has electrical terminals **29** that are thin and elongated, and are laterally spread apart. FIG. **4** shows the terminal arrays **28** arranged side-by-side, and having a common dielectric carrier **30**. For example, the terminal arrays **28** are formed by stamping a flat sheet of metal, followed by overmolding dielectric material onto the terminal arrays **28** to form the common dielectric carrier **30**. Subsequently, the side-by-side terminal arrays **28** are trimmed of unneeded metal, and are bent to the shapes as shown in FIG. **4**. The terminals **29** are bent to acute angles to provide doubled back, plug contacting portions **31**, midportions **32**, and PCB contacting portions **33** that project below the common dielectric carrier **30** to plug into a PCB. Alternate ones of the PCB contacting portions **33** are straight to extend in a first row. And further alternate ones of the PCB contacting portions **33** are bent to extend in a second row. As shown in FIG. **3**, each section **18***a* of the housing **4** receives the side-by-side terminal arrays **28** that are provided for the lower row R**1**. Specifically, the side-by-side terminal arrays **28** are provided for installation with respective side-by-side combs **9** and respective side-by-side plug receiving cavities **5** in the lower row R**1**.

Attention is directed to FIG. **5**, showing at least two side-by-side terminal arrays **34**. Each terminal array **34** has electrical terminals **35** that are thin and elongated, and are laterally spread apart. FIG. **4** shows the terminal arrays **34** arranged side-by-side, and having a common dielectric carrier **30** that is a duplicate of the previously discussed dielectric carrier **30**. For example, the terminal arrays **34** are formed by stamping a flat sheet of metal, followed by overmolding dielectric material onto the terminal arrays to form the common dielectric carrier **30**. Subsequently, the side-by-side terminal arrays **34** are trimmed of unneeded metal, and are bent to the shapes as shown in FIG. **5**. The terminals **35** are bent at acute angles to provide doubled back, plug contacting portions **36**, midportions **37**, and PCB contacting portions **38** that project below the common dielectric carrier to plug into a PCB. Alternate ones of the PCB contacting portions **38** are straight to extend in a first row. And further alternate ones of the PCB contacting portions **38** are bent to extend in a second row. FIG. **5** shows that all but two of the midportions **37** are coplanar in a first plane, and that two of the midportions **37** have offset sections that are elevated to extend in a different plane that is offset from the first plane. The midportions **37** that are elevated, have a reduced tendency for inducing cross talk in the remaining midportions **37**.

As shown in FIG. **3**, each section **18***a* of the housing **4** receives the side-by-side terminal arrays **34** that are provided for the upper row R**2**. Specifically, the side-by-side terminal arrays **34** are provided for installation with respective side-by-side combs **9** and respective side-by-side plug receiving cavities **5** in the upper row R**2**.

The common dielectric carriers **30**, as shown in FIGS. **4** and **5**, are duplicates of each other, which simplifies their manufacture and, further, which simplifies their installation in the housing **4**. With reference to FIGS. **4** and **5**, each of the dielectric carriers **30** has a pair of opposite lateral ends **39** with unitary guide sections **40** that are elongated, forward and rearward. Specifically, the guide sections **40** have projecting rails that are slightly tapered in both directions, forward and rearward, to prevent jamming during installation in the housing **4**. Each of the dielectric carriers **30** has a latching detent **41**.

Installation of the terminal arrays **28** of the lower row R**1** will now be described with reference to FIGS. **6** and **7**. The side-by-side terminal arrays **28** of the lower row R**1** are installed first, followed by installation of the side-by-side terminal arrays **34** of the upper row R**2**. Specifically, the side-by-side terminal arrays **28** of the lower row R**1**, together with the common dielectric carrier **30**, are installed into a corresponding section **18***a* of the housing **4**, with the single latching arm **20** extending between the side-by-side terminal arrays **28**. Further, the common dielectric carrier **30** for the lower row registers against the rear of the vertical transverse wall **8**.

With further reference to FIGS. **6** and **7**, the side-by-side terminal arrays **34** of the upper row, together with the common dielectric carrier, are installed into a corresponding section **18***a* of the housing **4**, with the single latching arm **20** extending between the side-by-side terminal arrays **34**. Further, the dielectric carriers **30** of both the lower and upper terminal arrays **28** and **34** are installed one said carrier **30** behind the other said carrier **30**. By providing the side-by-side terminal arrays **28** and **34** with respective common dielectric carriers **30**, the invention eliminates the problems associated with having to install such terminal arrays **28** and **34** one by one.

With continued reference to FIGS. **6** and **7**, as the dielectric carriers **30** of the terminal arrays **28** and **34** are installed, one said carrier **30** behind the other said carrier **30**, the guide sections **40**, in the form of rails, are guided along the common guides **19**, in the form of a single pair of grooves, of the housing **4**. Accordingly, the connector assembly **1** provides a housing of simplified construction, by having a single pair of guides **19** in the form of a single pair of grooves to guide the guide sections **40** on both dielectric carriers **30**.

The dielectric carriers **30** as they are installed, bias the tapered tip **22** of the single latching arm **20** outward. Once

the dielectric carriers **30** are past the tapered tip **22**, the latching arm **20** resiliently biases the tapered tip **22** to register the latching shoulder **23** in the latching detent **41** of the corresponding carrier **30** that is installed behind the other carrier **30**, which holds said carriers **30** one behind the other. The latch arm **20** engages the corresponding carrier **30** midway between the lateral ends **39** to distribute forces evenly between the side-by-side terminal arrays **34**. Further, the housing **4** is provided with a latching system having an integral latch **20** that is of robust size and strength to hold the dielectric carriers **30** in place, and yet such a latching system is provided in a minimal amount of space.

As shown in the cross section of FIG. **2**, the terminals **28** and **35** are installed through respective combs **9**, and extend along the grooves **14** in the horizontal interior wall **12**. The doubled back, plug contacting portions **31** and **36** are installed within respective plug receiving cavities **5** for mating connection with electrical plugs that plug into the plug receiving cavities **5**. The plug contacting portions **31** and **36** resiliently bias against inclined sections of respective combs **9** to deflect to a smaller acute angle, which preloads them with resilient spring energy. The PCB contacting portions **33** and **38** project beyond the bottom **25** of the housing **4** for connection to a PCB. As further shown in FIG. **2**, the latching arm **20** holds the terminal arrays **34** of the upper row R**2** behind the terminal arrays **28** of the lower row R**1** to position the PCB contacting portions **33** and **38** one behind the other. As further shown in FIG. **2**, the latching arm **20** holds the dielectric carriers **30** in abutment with each other, against the rear of the vertical transverse wall **8**.

Other embodiments and modifications of the invention are intended to be covered by the spirit and scope of the appended claims.

What is claimed is:

1. A connector assembly, comprising: a housing, a lower row of side-by-side terminal arrays having a common dielectric carrier, an upper row of side-by side terminal arrays having a common dielectric carrier, each of said carriers having guide sections at opposite lateral ends, said carriers being installed one carrier behind the other with the guide sections being guided along common guides of the housing, and the housing having a resilient latch arm extending between the side-by-side terminal arrays of both said lower and upper rows and holding said carriers one behind the other.

2. The connector assembly as recited in claim **1**, and further comprising: side-by-side plug receiving cavities in the housing arranged in a lower row and in an upper row, said cavities in the lower row receiving the lower row of side-by-side terminal arrays installed therein, and said cavities in the upper row receiving the upper row of side-by-side terminal arrays installed therein.

3. The connector assembly as recited in claim **1**, and further comprising: the housing having an upper row of plug receiving cavities into which extend the side-by-side terminal arrays of the upper row for mating connection with electrical plugs that plug into the upper row of plug receiving cavities, and the housing having a lower row of plug receiving cavities into which extend the side-by-side terminal arrays of the lower row for mating connection with electrical plugs that plug into the lower row of plug receiving cavities.

4. The connector assembly as recited in claim **1**, and further comprising: the guide sections having rails, and the common guides having a single pair of grooves along which the rails are guided to guide both said carriers one behind the other.

5. The connector assembly as recited in claim **1**, and further comprising: said latch arm extending between at least two of the side-by-side terminal arrays of both said upper and lower rows.

6. The connector assembly as recited in claim **1**, wherein said latch arm is external of the plug receiving cavities.

7. The connector assembly as recited in claim **1**, wherein said latch arm engages said one carrier midway between the lateral ends to distribute forces evenly between the side-by-side terminal arrays.

8. A connector assembly comprising: an upper row of side-by-side terminal arrays installed in side-by-side upper plug receiving cavities in a housing, a lower row of side-by-side terminal arrays installed in side-by-side lower plug receiving cavities in the housing, both of said rows of side-by-side terminal arrays having respective common dielectric carriers, with one of said carriers being behind the other of said carriers, and the housing having a resilient latch arm extending between at least two of the side-by-side terminal arrays in both rows and holding said carriers one behind the other.

9. The connector assembly as recited in claim **8** and further comprising: a section of said housing having a pair of partitions, the partitions having common guides facing toward each other, and guide sections of the carriers being guided one behind the other along the common guides.

10. A connector assembly, comprising: a housing carrying a lower row of side-by side-terminal arrays having a first common dielectric carrier, and an upper row of side-by-side terminal arrays having a second common dielectric carrier, a single latching arm on the housing, and both of said common dielectric carriers being held in place by said single latching arm engaging at least one of said common dielectric carriers.

11. The connector assembly as recited in claim **10**, and further comprising: side-by-side plug receiving cavities in the housing arranged in a lower row and in an upper row, said cavities in the lower row receiving the lower row of side-by-side terminal arrays installed therein, and said cavities in the upper row receiving the upper row of side-by-side terminal arrays installed therein.

12. The connector assembly as recited in claim **10**, and further comprising: the housing having an upper row of plug receiving cavities into which extend the side-by-side terminal arrays of the upper row for mating connection with electrical plugs that plug into the upper row of plug receiving cavities, and the housing having a lower row of plug receiving cavities into which extend the side-by-side terminal arrays of the lower row for mating connection with electrical plugs that plug into the lower row of plug receiving cavities.

13. The connector assembly as recited in claim **10**, and further comprising: both of said rows of side-by-side terminal arrays having respective common dielectric carriers.

14. The connector assembly as recited in claim **11**, and further comprising: guide sections of the carriers being guided one behind the other along common guides of the housing.

15. The connector assembly as recited in claim **14**, and further comprising: the guide sections having rails, and the common guides having a single pair of grooves along which the rails are guided to guide both said carriers one behind the other.

16. The connector assembly as recited in claim **10**, and further comprising: said latch arm extending between at least two of the side-by-side terminal arrays of both said upper and lower rows, and the latch arm holding the terminal arrays of the upper row behind the terminal arrays of the lower row.

17. The connector assembly as recited in claim 16, wherein said latch arm is external of the plug receiving cavities.

18. The connector assembly as recited in claim 16, and further comprising: said latch arm engages the second common dielectric carrier midway between the lateral ends to distribute forces evenly between the side-by-side terminal arrays of the upper row.

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